

wichealth.org Program Evaluation, October 1, 2011 – September 30, 2012

In addition to analysis and presentation of the wichealth.org exit survey and the overall site performance statistics for the current annual reporting period, this evaluation will address the following focused research questions:

1. *How consistent are wichealth.org site performance statistics from year to year?*
2. *What is the current rate of growth in wichealth.org usage? Using data collected back to the hosting change in December, 2010, what is the forecasted usage rate for the next several years?*
3. *What are the current performance statistics associated with the newly implemented impact manager for returning users?*

Executive Summary

- This evaluation includes data collected from December 10, 2010 through September 30, 2012, focused on the current reporting period of October 1, 2011 – September 30, 2012 with comparison to the prior period.
- wichealth.org usage has increased to a rate of over 400,000 completed lessons per year. Compared to the annualized result from the 2010-2011 reporting period of just over 300,000, this represents an increase in excess of 30%. This increase is mostly associated with the addition of Oklahoma and expansion of California participation.
- Overall exit survey results and user stage of change progression remain consistent with prior evaluations, with over 90% of early staged users advancing at least one stage of change. Further, 94% of users indicated that they believe they can make changes using what they learned, a significant increase over the prior evaluation period. However, results stratified by lesson and state continue to show significant variance.
- Marked shifts in lesson usage were observed for the 2011-2012 evaluation period compared to the 2010-2011 evaluation period. Most notably, usage of the “Fruit and Veggies Grow Healthy Kids” lesson more than doubled, while usage of the “Secrets for Feeding Picky Eaters” lesson was less than 50% of that demonstrated the prior evaluation period.
- wichealth.org performance statistics are remarkably consistent year over year, despite the addition of new lessons and new participating states. This indicates that results are reliably generalizable to future participating state and lesson additions.
- Growth in wichealth.org usage continues at a very strong rate at nearly 10 years post inception. It is expected that another 1,000,000 uses will be recorded within the course of the next two years.
- Missing exit survey data continues to be an issue. In fact, there was an extended period of time during the current evaluation period (7/2011-3/2012), where exit survey completion dropped significantly. This appears to be related to a system issue.
- Initial results concerning wichealth.org user outcomes have been recorded via the impact manager enhancement launched in June of this year. 80% of returning wichealth.org users

demonstrated maintenance or progression beyond their ending stage assessed at lesson completion, while 20% exhibited relapse. Note that a 20% relapse rate is much lower than expected for healthy eating educational interventions.

Key Recommendations

1. As indicated during the last evaluation period, users should be required to complete exit survey items when finishing lessons. Further, this evaluation identified an extended period in which significantly fewer exit surveys were completed, likely due to a system issue. Quality control monitoring procedures need to be implemented in order to continuously measure the rate of survey completion as well as other user milestones to avoid such issues from persisting over long periods of time.
2. Users need to be required to complete their profiles and to add at least one child. Only just over 145,000 of the over 400,000 users this evaluation period added information about their child(ren). Additionally, users should be prompted regularly to update their profiles.
3. Investigation of the cause in the shift of lesson usage is warranted. It appears that between the current evaluation period and the last, many of the more popular lessons experienced a significant drop in usage.
4. The new breastfeeding lesson “Breastfeeding: Building a Bond for a Lifetime” was significantly less effective in progressing users along the stage of change continuum compared to the “Support for Breastfeeding Moms” lesson. Reasons why users are holding back from behavior change promoted by this lesson need to be better addressed via the links made available to users of this lesson.
5. Given the excellent initial results of the impact manager enhancement, it is recommended that additional lessons be incorporated into this new capacity as soon as possible.
6. Additional research questions need to be fed into the evaluation process by wichealth.org staff in order to get the most benefit from ongoing evaluation.

Overall Usage Statistics

During the current annual evaluation period, there were 401,989 wichealth.org online lessons completed by 162,330 unique WIC participants. Compared to the annualized result from the 2010-2011 reporting period of 306,470, this represents an increase of 31.2%. The continued growth of California and Oklahoma WIC clinic participation has contributed significantly to this increase, with participation of these states doubling since the last evaluation period (Figure 2). For the current evaluation period, California surpassed Michigan as the state with the largest number of lessons completed (133,612).

Figure 1 shows the monthly trend of completed lessons since December 2010. Note the dramatic shift in lessons completed within the “Secrets for Feeding Picky Eaters” lesson (8.5 point decrease in proportion of completed uses) as well as within the “Fruits and Veggies Grow Healthy Kids” lesson (12 point increase in proportion of completed uses). Usage of the “Support for Breastfeeding Moms” lesson has been replaced by a strong increase in usage of the “Breastfeeding: Building a Bond for a Lifetime” lesson. Point changes in the proportion of uses attributed to each lesson by evaluation period is presented in table 1.

Figure 1. Monthly Trend of Completed Lessons by Lesson Name, December 2010 – September 2012

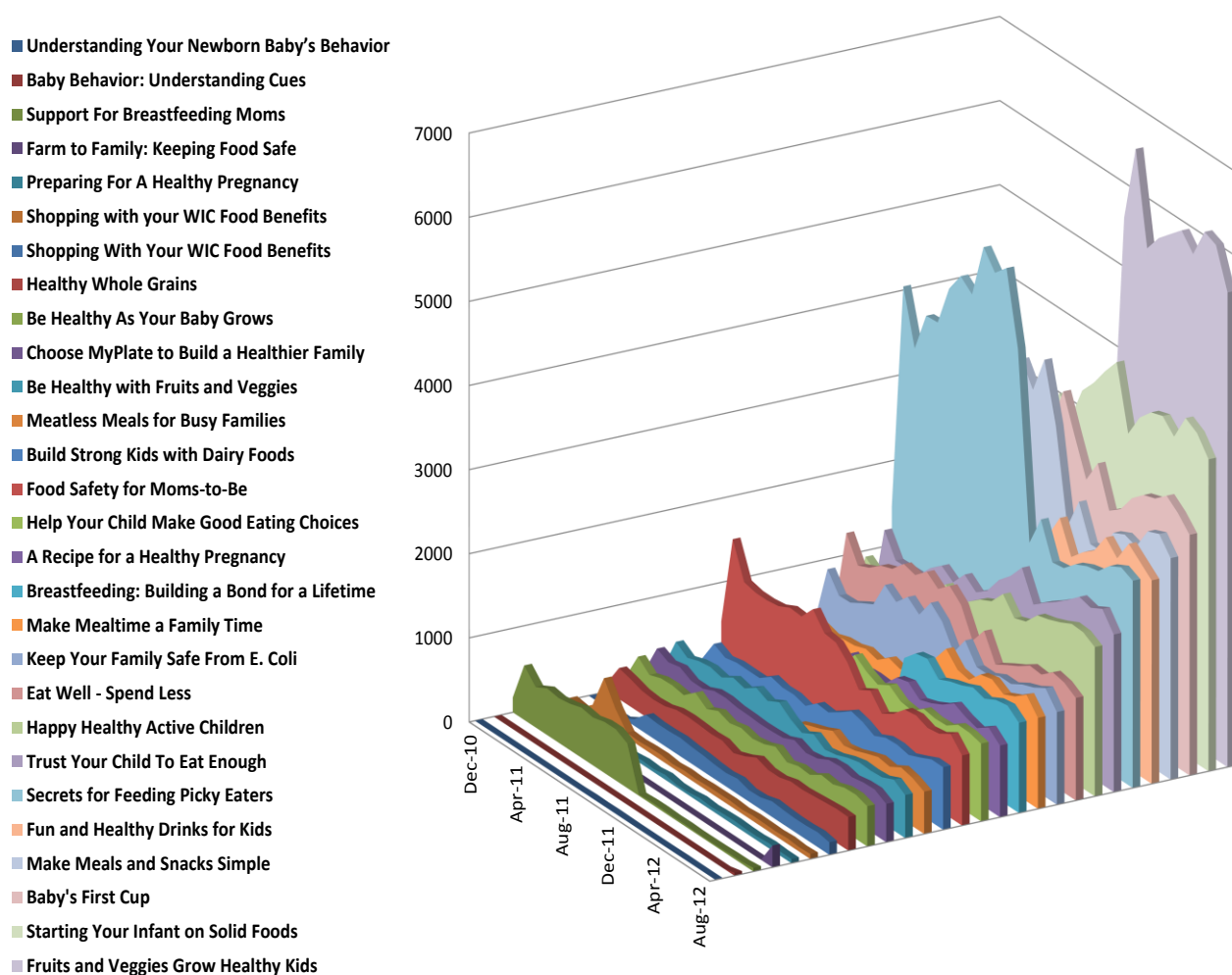
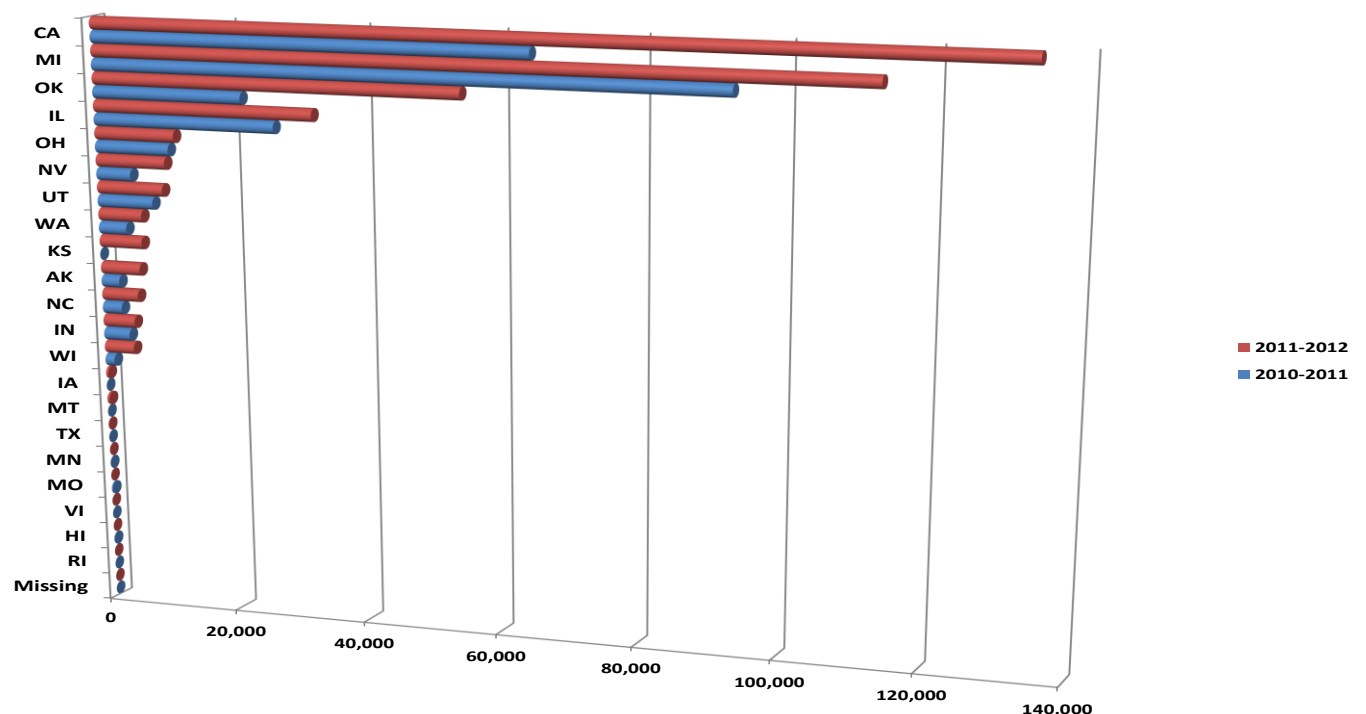


Table 1. Completed Lessons by Lesson Name and Evaluation Period, December 2010 – September 2012

Lesson	Period		Proportion Change
	2010-2011	2011-2012	
Fruits and Veggies Grow Healthy Kids	9,208	63,274	12.026%
Starting Your Infant on Solid Foods	26,847	45,435	0.474%
Baby's First Cup	27,210	35,417	-2.164%
Secrets for Feeding Picky Eaters	41,275	32,458	-8.573%
Make Meals and Snacks Simple	29,731	32,200	-3.981%
Fun and Healthy Drinks for Kids	13,044	27,169	1.498%
Trust Your Child To Eat Enough	11,393	21,808	0.830%
Happy Healthy Active Children	10,299	19,719	0.751%
Eat Well - Spend Less	12,474	14,915	-1.321%
Keep Your Family Safe From E. Coli	9,610	13,851	-0.430%
Make Mealtime a Family Time	4,875	12,573	1.161%
Breastfeeding: Building a Bond for a Lifetime	0	12,132	3.018%
Food Safety for Moms-to-Be	11,853	10,912	-2.066%
Help Your Child Make Good Eating Choices	7,148	10,627	-0.239%
A Recipe for a Healthy Pregnancy	5,652	10,218	0.262%
Build Strong Kids with Dairy Foods	3,698	7,583	0.395%
Be Healthy with Fruits and Veggies	4,829	6,200	-0.405%
Meatless Meals for Busy Families	0	5,797	1.442%
Choose MyPlate to Build a Healthier Family	4,092	5,746	-0.221%
Be Healthy As Your Baby Grows	3,718	5,334	-0.173%
Healthy Whole Grains	2,913	4,237	-0.121%
Shopping with your WIC Food Benefits	2,357	2,703	-0.278%
Support For Breastfeeding Moms	5,329	784	-1.954%
Preparing For A Healthy Pregnancy	381	581	-0.009%
Farm to Family: Keeping Food Safe	0	259	0.064%
Baby Behavior: Understanding Cues	0	36	0.009%
Understanding Your Newborn Baby's Behavior	0	21	0.005%
TOTAL	247,936	401,989	

Figure 2. Completed Lessons by State and Evaluation Period, December 2010 – September 2012



As reported in all prior evaluations, most wichealth.org users starting in the pre-contemplation, contemplation or preparation stages with respect to the behavior of interest progress at least one stage of change by lesson completion. During the current evaluation period, 57% of users that began their lesson in the pre-contemplation stage did not progress. This is 13 points higher than the last evaluation period and represents the largest proportion of users beginning in pre-contemplation that do not advance in stage of change reported to date. Table 2 shows the beginning and ending stage status for all lessons completed during both the prior and current evaluation periods.

Table 2. User Beginning and Ending Stage of Behavior Change Status for Completed Lessons

2010-2011							
Begin Stage	End Stage						2010-2011 Total
	Pre-Contemplation	Contemplation	Preparation	Action	Maintenance	Anticipatory Guidance	
Pre-Contemplation	2272 (44%)	387 (7%)	517 (10%)	1984 (38%)	23 (0%)	2 (0%)	5,185
Contemplation		1117 (21%)	1798 (34%)	2349 (45%)	1 (0%)	10 (0%)	5,275
Preparation			2800 (4%)	62225 (96%)	40 (0%)	6 (0%)	65,071
Action				17404 (100%)	16 (0%)		17,420
Maintenance					142764 (100%)	3 (0%)	142,767
Anticipatory Guidance						12218 (100%)	12,218
2010-2011 Total	2293 (1%)	1505 (1%)	5112 (2%)	83999 (34%)	142793 (58%)	12234 (5%)	247,936
2011-2012							
Begin Stage	End Stage						2011-2012 Total
	Pre-Contemplation	Contemplation	Preparation	Action	Maintenance	Anticipatory Guidance	
Pre-Contemplation	6688 (57%)	818 (7%)	978 (8%)	3281 (28%)	2 (0%)		11,767
Contemplation		1618 (22%)	2581 (35%)	3271 (44%)	1 (0%)		7,471
Preparation			3917 (4%)	99926 (96%)	10 (0%)		103,853
Action				29592 (100%)			29,592
Maintenance					232037 (100%)		232,037
Anticipatory Guidance						17266 (100%)	17,266
2011-2012 Total	6725 (2%)	2436 (1%)	7478 (2%)	136064 (34%)	232020 (58%)	17263 (4%)	401,986

During the 2010-2011 period, 44% of users that began their lesson in the pre-contemplation stage did not progress at least one stage, while for the 2011-2012 period this increased to 57% of users beginning their lesson in the pre-contemplation stage. The root cause of this apparent decrease in effectiveness for the current evaluation period has to do with the implementation and usage of the “Breastfeeding: Building a Bond for a Lifetime” lesson. As indicated in table 1, this lesson had 0 completions during 2010-2011 evaluation period, while there were over 12,000 for the current period. This particular lesson has the lowest rate of stage progression per early beginning stage user (pre-contemplation, contemplation and preparation) (see table 3).

Table 3 demonstrates that, on average, most lessons achieve a progression of one stage among early begin stage users (EBSU). Lessons that focus on the topic of breastfeeding continue to demonstrate lower levels of stage progression compared to other lessons, with a likelihood of progression of about half that of other lessons. Lessons slightly underperforming compared to the overall average include “Food Safety for Moms-to-Be” and “Starting Your Infant on Solid Foods”, each demonstrating about 10% less progression than the overall average. It is interesting to note that these lessons, like the ones concerning breastfeeding, focus on behaviors during the user’s pre-natal period or while the user’s child is still an infant.

Table 3. Average Number of Stages Progressed per Early Beginning Stage User by Lesson and Evaluation Period

Lesson	2010-2011		2011-2012	
	EBSU Lessons Completed (Valid N)	Stages per EBSU Lesson Completed	EBSU Lessons Completed (Valid N)	Stages per EBSU Lesson Completed
Food Safety for Moms-to-Be	345	0.9	396	0.9
Be Healthy with Fruits and Veggies	2,009	1.0	2,738	1.0
Preparing For A Healthy Pregnancy	166	1.2	280	1.0
Eat Well - Spend Less	6,168	1.0	7,446	1.0
Secrets for Feeding Picky Eaters	20,491	1.0	17,664	1.0
Make Meals and Snacks Simple	8,004	1.0	8,726	1.0
Choose MyPlate to Build a Healthier Family	1,525	1.0	2,014	1.1
Healthy Whole Grains	1,561	1.0	2,118	1.0
A Recipe for a Healthy Pregnancy	3,216	1.1	5,370	1.1
Be Healthy As Your Baby Grows	890	1.2	1,296	1.2
Baby's First Cup	3,210	1.0	5,387	1.0
Starting Your Infant on Solid Foods	7,475	0.9	12,519	0.9
Support For Breastfeeding Moms	925	0.6	119	0.6
Keep Your Family Safe From E. Coli	155	1.0	234	1.0
Help Your Child Make Good Eating Choices	4,059	1.1	5,804	1.0
Fruits and Veggies Grow Healthy Kids	2,904	1.0	16,807	1.0
Build Strong Kids with Dairy Foods	1,385	1.1	2,477	1.1
Trust Your Child To Eat Enough	2,569	1.0	5,501	1.1
Make Mealtime a Family Time	1,028	1.0	2,361	1.0
Fun and Healthy Drinks for Kids	1,891	1.0	4,299	1.1
Happy Healthy Active Children	4,960	1.1	9,482	1.1
Shopping with your WIC Food Benefits	595	1.0	705	1.0
Meatless Meals for Busy Families	0	NA	3,807	0.9
Understanding Your Newborn Baby's Behavior	0	NA	7	1.1
Breastfeeding: Building a Bond for a Lifetime	0	NA	5,451	0.4
Baby Behavior: Understanding Cues	0	NA	10	0.6
Farm to Family: Keeping Food Safe	0	NA	73	0.9
Grand Total	75,531	1.0	123,091	1.0

Prior to the last annual evaluation, a wichealth.org exit survey was considered complete when a user responded to at least one usability/behavior change item (Table 4). However, as these items are not required to progress past the survey page, many users choose not to complete them. For the current evaluation period, there were over 200,000 lessons completed without record of one exit survey response. This is a significant increase over the prior evaluation period.

Review of the monthly survey completion rate (see table 5), indicates that there may have been an issue between July 2011 and March 2012 that caused a dramatic drop in the number of exit surveys completed. More investigation of this observed drop in exit survey completion is warranted.

Results from the wichealth.org exit surveys collected during the current evaluation period were consistent with previous evaluations. Table 4 presents the exit survey results for the usability and behavior change items used in the evaluation, comparing the current (n = 183,614) and prior evaluation periods (n = 261,550).

Table 4. wichealth.org Exit Survey Results for Key Usability and Behavior Change Items

	2010-2011	2011-2012
Valid N	261,550	183,614
The website is easy to use	95.8%	97.4%
The information on this website is easy to understand	98.0%	98.3%
The information on this website is helpful	97.2%	97.3%
Valid N Child Feeding Questions	126,723	7,889
I learned something that will help my child's eating habits	93.1%	94.0%
I learned something that will help me change the way I feed my child	87.1%	88.6%
I believe I can make changes using what I learned	89.3%	94.0%
I want to use web pages to learn about other WIC topics	85.9%	89.7%

n missing = 218,375

Table 5. wichealth.org Monthly Exit Survey Completions, December 2010 – September 2012

Year	Month	Exit Surveys Completed
2010	12	849
2011	1	27,292
2011	2	37,984
2011	3	42,709
2011	4	43,549
2011	5	47,474
2011	6	51,381
2011	7	3,342
2011	8	3,518
2011	9	3,452
2011	10	3,222
2011	11	3,478
2011	12	3,210
2012	1	3,202
2012	2	2,745
2012	3	2,632
2012	4	15,239
2012	5	29,942
2012	6	29,438
2012	7	31,261
2012	8	30,531
2012	9	28,714

Most users identified the wichealth.org website as their preferred method for receiving nutrition education (Table 6). Note that the display order for the wichealth.org website option is the last in the drop down selection box presented on the survey page. Despite this, 85.6% of users responded that they preferred to login to wichealth.org for nutrition education over other available methods.

Table 6. Exit Survey Result for User Preferred Method of Receiving Nutrition Education

User Preferred Means of Nutrition Education	N	%
wichealth.org website	300,703	85.6%
Person-to-person counseling at the WIC Clinic	27,938	8.0%
Information mall/other resources at the WIC Clinic	12,748	3.6%
Class/Group session at the WIC Clinic	9,826	2.8%

Also consistent with prior evaluation findings, over 75 of users completed their wichealth.org lessons from the comfort of their own home, with the user's workplace serving as the second most frequent location with just over 7.5% of the total lessons completed during the current evaluation period (Table 5). Workplace usage is significantly higher than observed during the prior evaluation period.

Table 7. wichealth.org User Exit Survey Responses to Access Location Item

User Computer Access Location	N	%
Home	267,327	75.2%
Work	26,521	7.5%
WIC Clinic	17,475	4.9%
Parent's Home	15,708	4.4%
Library	10,455	2.9%
Other	9,480	2.7%
Friend's Home	8,349	2.3%

As indicated above and now currently representing 28% of all lessons completed, Michigan is no longer the most common residence of wichealth.org users. California now represents over 33% of all users, nearly 7% of whom are Spanish speaking and nearly 52% reporting Latino ethnicity. Spanish speaking wichealth.org users made up 2.9% of the total completed lessons. States with the largest number of Spanish speaking users were Nevada (13.3%), Kansas (9.6%) and California (6.9%) (table 8).

Table 8 also includes a heat map for the key usability and behavior change survey items based on relative performance by state, green indicating strong item agreement and red indicating poor agreement. Note that Ohio, as reported in the previous evaluation, continues to have the lowest rates of user agreement with many exit survey items. Overall, 94% of users indicated that they believe they can make changes using what they learned. However there were states with a relatively large number of exit surveys completed that demonstrated markedly lower levels of agreement, including Alaska (89.4%; n=3,024) and Wisconsin (89.9%; n=2,195).

Table 8. Lessons Completed by State with Language and Exit Survey Items, Current Evaluation Period Only

State	Valid N	% Spanish Language Users	% Latino Users	The website is easy to use	The information on this website is easy to understand	The information on this website is helpful	Valid N Child Feeding Questions	I learned something that will help my child's eating habits	I learned something that will help me change the way I feed my child	I believe I can make changes using what I learned	I want to use web pages to learn about other WIC topics
AK	3,024	0.4%	8.5%	96.3%	98.4%	95.8%	65	87.7%	78.5%	89.4%	82.4%
CA	63,921	6.9%	51.6%	97.6%	98.4%	97.9%	1,827	96.2%	92.7%	95.4%	92.9%
IL	14,758	2.3%	11.3%	97.4%	98.4%	97.4%	822	92.8%	88.4%	94.1%	90.4%
IN	1,948	0.5%	4.1%	97.7%	98.5%	97.2%	53	96.2%	96.2%	92.6%	89.1%
MI	51,117	0.2%	3.1%	97.5%	98.4%	97.1%	2,966	93.1%	85.8%	92.8%	86.7%
MN	8	0.0%	0.0%	100.0%	100.0%	75.0%	0	NA	NA	75.0%	87.5%
NV	4,594	13.3%	44.5%	97.1%	98.0%	98.2%	193	98.4%	96.9%	96.6%	93.1%
OH	5,631	0.0%	2.6%	93.3%	96.7%	95.3%	1,196	93.8%	89.2%	91.7%	84.9%
RI	1	0.0%	8.3%	100.0%	100.0%	100.0%	0	NA	NA	100.0%	100.0%
UT	3,838	2.4%	11.8%	96.9%	97.7%	96.5%	96	94.8%	84.4%	93.0%	89.7%
WA	2,774	1.1%	8.7%	96.6%	97.9%	96.4%	71	90.1%	83.1%	90.0%	84.1%
WI	2,195	0.8%	5.7%	95.4%	97.3%	95.4%	30	90.0%	86.7%	89.9%	83.0%
NC	2,678	2.7%	11.1%	97.6%	98.6%	97.4%	70	90.0%	80.0%	94.9%	90.0%
MO	3	0.7%	4.1%	100.0%	100.0%	100.0%	0	NA	NA	100.0%	100.0%
OK	23,830	2.6%	14.9%	98.2%	98.4%	97.5%	498	94.2%	89.2%	94.6%	90.9%
KS	3,926	9.6%	26.7%	95.2%	96.8%	96.0%	2	100.0%	50.0%	90.8%	85.3%
MT	178	0.0%	3.0%	96.6%	98.9%	95.5%	0	NA	NA	92.1%	86.0%
IA	200	1.8%	8.4%	96.5%	99.0%	91.0%	0	NA	NA	88.0%	79.0%
TX	6	0.0%	0.0%	100.0%	100.0%	100.0%	0	NA	NA	66.7%	100.0%
OVERALL	184,630	2.9%	19.5%	97.4%	98.3%	97.3%	7,889	94.0%	88.6%	94.0%	89.7%

Table 9 presents another heat map display of wichealth.org exit survey results stratified by each lesson. Most of the lessons that have significantly lower levels of user agreement with the exit survey items are those with relatively low numbers of exit surveys completed. User believe in whether they can make changes using what they learned was lowest for the “Breastfeeding: Building a Bond for a Lifetime”

lesson. This lesson, along with “Food Safety for Moms-to-Be” and “A Recipe for Healthy Pregnancy” also demonstrated relatively low levels of user agreement with whether they wanted to use web pages to learn about other WIC topics. Again, it appears that the pre-natal and early infancy topics have the most variability in user experience. There may be key barriers experienced by mothers still pregnant or caring for infants that may not be addressed as effectively or thoroughly as barriers associated with other wichealth.org topics. Review of the specific reasons why users of the pre-natal and early infancy lesson topics are holding back from behavior change is discussed in further detail below.

Table 9. Exit Survey Usability and Behavior Change Items by Lesson, Current Evaluation Period Only

Lesson	Valid N	The website is easy to use	The information on this website is easy to understand	The information on this website is helpful	Valid N Child Feeding Questions	I learned something that will help my child's eating habits	I learned something that will help me change the way I feed my child	I believe I can make changes using what I learned	I want to use web pages to learn about other WIC topics
Food Safety for Moms-to-Be	4,540	97.3%	98.4%	97.6%	125	90.4%	90.4%	94.8%	87.7%
Be Healthy with Fruits and Veggies	2,760	96.4%	98.2%	97.7%	94	93.6%	91.5%	94.7%	89.6%
Preparing For A Healthy Pregnancy	231	96.1%	98.7%	97.0%	4	75.0%	50.0%	95.7%	90.5%
Eat Well - Spend Less	6,823	96.7%	98.2%	97.1%	409	88.8%	85.3%	93.8%	89.0%
Secrets for Feeding Picky Eaters	14,137	97.1%	98.3%	97.2%	1,387	95.1%	90.7%	93.7%	89.6%
Make Meals and Snacks Simple	15,235	97.9%	98.6%	97.4%	1,296	94.5%	88.6%	94.5%	90.3%
Choose MyPlate to Build a Healthier Family	2,627	96.8%	98.0%	97.2%	106	91.5%	85.8%	94.9%	90.1%
Healthy Whole Grains	1,856	96.9%	98.3%	97.4%	53	86.8%	86.8%	94.7%	89.1%
A Recipe for a Healthy Pregnancy	4,527	97.4%	98.1%	97.5%	80	83.8%	92.5%	94.2%	87.4%
Be Healthy As Your Baby Grows	2,362	96.5%	98.0%	97.1%	60	86.7%	88.3%	95.6%	90.2%
Baby's First Cup	15,681	98.0%	98.5%	97.4%	678	94.2%	82.2%	93.2%	89.7%
Starting Your Infant on Solid Foods	20,295	97.7%	98.3%	97.6%	796	95.6%	88.1%	93.2%	89.2%
Support For Breastfeeding Moms	123	96.7%	100.0%	96.7%	8	87.5%	75.0%	85.4%	97.6%
Keep Your Family Safe From E. Coli	5,899	97.8%	98.5%	97.9%	217	89.9%	93.1%	95.7%	91.9%
Help Your Child Make Good Eating Choices	4,624	96.6%	98.1%	96.9%	198	99.0%	94.9%	94.8%	90.4%
Fruits and Veggies Grow Healthy Kids	30,437	96.8%	97.9%	97.3%	529	96.4%	91.7%	94.2%	89.1%
Build Strong Kids with Dairy Foods	3,468	98.3%	98.2%	97.0%	121	96.7%	93.4%	94.8%	91.3%
Trust Your Child To Eat Enough	10,315	97.6%	98.6%	97.1%	491	91.6%	86.6%	93.5%	90.2%
Make Mealtime a Family Time	5,625	97.1%	98.1%	97.4%	138	94.9%	91.3%	94.5%	90.0%
Fun and Healthy Drinks for Kids	13,421	97.9%	98.7%	97.7%	639	95.8%	89.7%	95.0%	90.7%
Happy Healthy Active Children	9,573	97.4%	98.4%	97.5%	426	93.7%	85.9%	95.0%	90.6%
Shopping with your WIC Food Benefits	1,131	97.3%	98.1%	95.9%	34	82.4%	76.5%	94.0%	88.2%
Meatless Meals for Busy Families	2,580	97.1%	97.9%	96.3%	0	NA	NA	93.8%	90.4%
Breastfeeding: Building a Bond for a Lifetime	5,101	97.1%	98.2%	96.2%	0	NA	NA	87.1%	87.8%
Baby Behavior: Understanding Cues	29	100.0%	100.0%	100.0%	0	NA	NA	93.1%	89.7%
Farm to Family: Keeping Food Safe	214	93.9%	97.7%	98.6%	0	NA	NA	94.9%	90.7%
OVERALL	183,614	97.4%	98.3%	97.3%	7,889	94.0%	88.6%	94.0%	89.7%

wichealth.org users provide information about their age, race and child(ren) by updating their user profiles. Profile information was input for most of the unique users that completed lessons during the current evaluation period. This is significantly improved over the proportion reported in the prior annual evaluation.

Table 9 presents a breakdown of wichealth.org profiles by user age group. Consistent with prior evaluation, the overall average age of WICHealth.org users is about 29 years. This is pretty consistent among all states with at least 200 completed user profiles.

Table 10 provides the information on user race based on completed profiles among WIC clients. Nearly 67% of wichealth.org users reported to be white, just under 15% as black or African American and 7.6% as multiracial. Note that 48,524 profiles were missing race information.

Table 9. wichealth.org User Profiles by State and Average Age

State	Valid User N	Average Age
AK	5,699	28.9
CA	105,055	29.8
IL	42,134	29.9
IN	8,466	29.8
MI	141,156	29.0
MN	110	32.4
NV	8,231	31.0
OH	9,774	29.0
RI	6	34.5
UT	15,794	29.5
WA	9,614	30.2
WI	4,840	30.5
HI	69	31.6
NC	5,489	28.9
MO	137	29.2
OK	33,080	28.5
KS	4,340	28.1
MT	245	31.2
IA	279	30.8
Missing	646	29.9
Overall	395,164	29.4

Table 10. wichealth.org User Profiles by Race

State	N	American Indian or Alaskan Native	Asian	Black or African American	Multiracial	Native Hawaiian or Pacific Islander	White
Missing	9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
AK	3,105	21.3%	4.6%	7.7%	4.2%	2.9%	59.4%
CA	42,486	6.1%	9.9%	10.6%	14.6%	2.5%	56.3%
IL	11,007	2.4%	4.6%	16.9%	5.3%	0.4%	70.5%
IN	2,716	1.1%	2.4%	13.3%	3.9%	0.3%	79.1%
MI	36,496	2.1%	1.9%	22.1%	3.3%	0.3%	70.4%
MN	16	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
NV	3,584	4.2%	7.6%	16.3%	14.8%	4.0%	53.0%
OH	2,779	1.5%	0.7%	9.3%	2.7%	0.2%	85.6%
RI	1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
UT	4,558	3.1%	2.5%	1.3%	5.6%	2.5%	85.0%
WA	3,364	3.4%	3.9%	3.6%	5.9%	2.1%	81.0%
WI	2,539	2.0%	4.3%	4.0%	3.0%	0.2%	86.5%
HI	6	0.0%	16.7%	0.0%	16.7%	16.7%	50.0%
NC	2,777	2.8%	1.8%	36.8%	5.4%	0.2%	52.9%
MO	16	0.0%	0.0%	18.8%	6.3%	0.0%	75.0%
OK	19,951	9.6%	2.2%	12.4%	4.1%	0.6%	71.0%
KS	3,471	3.1%	2.7%	14.5%	7.1%	0.7%	71.9%
MT	219	5.5%	0.9%	0.0%	1.4%	0.9%	91.3%
IA	210	1.4%	0.5%	1.9%	1.4%	0.5%	94.3%
VI	3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Overall	139,313	5.0%	4.9%	14.5%	7.6%	1.3%	66.7%

Table 11 presents information on the children of wichealth.org users from completed profiles (n=145,104). The majority of wichealth.org users are mothers. The average number of children per user was 1.4 and the average child age was 2.6 years.

Table 11. wichealth.org Average User's Child Age with Current Pregnant and Child Counts

User Relationship to Child	Pregnant Count	Child Count	Average Age
Mother	13,238	188,797	2.6
Father	42	3,383	3.1
Foster Parent	5	3,342	2.6
Grandparent	4	1,624	3.1
Guardian	10	1,414	3.0
Missing	334	1,030	2.3
Other	175	684	3.0
Day Care Provider	3	35	3.0
Overall	13,811	200,309	2.6

Table 12 presents the 100 most frequently used links by wichealth.org users along with the average minutes of usage per view. User feedback for each link is available including user mean rating of link (scale of 1-5) and the ranking of how often the link is selected as a user favorite.

Table 12. Top 100 Most Frequently Used wichealth.org Links, Current Evaluation Period

Link Title	Lesson Name	Stage	Mean Link Rating	Favorite Link Rank	Views	Minutes per View
Foods to stay away from before 12 months.	Starting Your Infant on Solid Foods	M	4.32	21	12,825	2.6
Easy fruit and veggie recipes for your family.	Fruits and Veggies Grow Healthy Kids	M	4.46	2	12,327	2.7
Fun and easy meals and snacks that include fruits and veggies.	Fruits and Veggies Grow Healthy Kids	M	4.33	3	11,336	1.8
Fun snack ideas!	Make Meals and Snacks Simple	M	4.20	4	10,711	1.7
How to get your kids to enjoy fruits and veggies.	Fruits and Veggies Grow Healthy Kids	P	4.28	17	10,428	4.5
Recipes your children will love to help make - and eat!	Fruits and Veggies Grow Healthy Kids	M	4.38	1	9,146	1.7
Feeding your baby finger foods.	Starting Your Infant on Solid Foods	M	4.27	38	8,722	3.7
Fun drink recipes.	Fun and Healthy Drinks for Kids	M	4.38	22	8,464	2.4
Offer small portion sizes.	Trust Your Child To Eat Enough	M	4.22	47	8,347	2.5
Ways to get your kids to eat more fruits and veggies.	Fruits and Veggies Grow Healthy Kids	M	4.35	8	8,163	4.9
Make food and mealtimes fun.	Trust Your Child To Eat Enough	M	4.20	52	7,891	1.5
What do I feed my baby after fruits and vegetables are introduced?	Starting Your Infant on Solid Foods	M	4.41	32	7,768	3.6
Protect your baby's teeth from tooth decay.	Baby's First Cup	M	4.45	26	7,604	1.9
Cups - what are the best ones?	Fun and Healthy Drinks for Kids	M	4.30	48	7,597	2.2
Recommended serving sizes for milk, 100% juice, and water.	Fun and Healthy Drinks for Kids	M	4.54	29	7,466	1.6
Easy meal ideas.	Make Meals and Snacks Simple	M	4.33	5	7,409	3.0
Can I feed my baby fish?	Starting Your Infant on Solid Foods	M	4.35	67	7,279	4.1
Quick snack ideas.	Secrets for Feeding Picky Eaters	A	4.45	16	7,230	2.8
Recipe ideas.	Make Meals and Snacks Simple	M	4.49	6	7,099	5.4
Make your child's meals and snacks full of color.	Fruits and Veggies Grow Healthy Kids	M	4.23	9	6,976	3.8
Foods to stay away from before 12 months.	Starting Your Infant on Solid Foods	A	4.49	37	6,914	3.6
Encourage self-feeding.	Starting Your Infant on Solid Foods	M	4.13	61	6,875	0.8
How much should I feed my baby?	Starting Your Infant on Solid Foods	A	4.27	44	6,861	2.7
Begin with iron-fortified cereal.	Starting Your Infant on Solid Foods	P	3.88	60	6,642	2.5
The "dos" and "don'ts" to help your picky eater become a good eater.	Secrets for Feeding Picky Eaters	A	4.35	20	6,641	1.4
Take out and frozen food safety.	Keep Your Family Safe From E. Coli	M	4.37	45	6,570	2.3
Quick and healthy snack ideas.	Make Meals and Snacks Simple	M	4.17	10	6,327	2.6
Healthy smoothie recipes your child will love.	Fun and Healthy Drinks for Kids	M	4.73	19	6,253	3.4
Simple tips on how to get your child to eat more fruits and veggies.	Fruits and Veggies Grow Healthy Kids	M	4.30	13	6,036	1.8
Safe food handbook for the kitchen.	Keep Your Family Safe From E. Coli	M	4.57	36	5,914	4.6
Encouraging your child to drink water.	Fun and Healthy Drinks for Kids	M	4.37	51	5,901	1.8
Is it ok to give my baby drinks that contain sugar?	Baby's First Cup	M	4.05	64	5,832	1.2
Fruit and veggie coloring page for your child.	Fruits and Veggies Grow Healthy Kids	M	4.47	7	5,635	1.0
Easy ways to include more fruits and veggies in your child's meals and snacks.	Fruits and Veggies Grow Healthy Kids	M	4.05	12	5,542	3.3
Recipes in a snap.	Make Meals and Snacks Simple	M	4.13	11	5,392	3.7
How can I protect my baby from teeth problems?	Baby's First Cup	A	4.45	90	5,380	2.0
Tips for keeping foods safe.	Food Safety for Moms-to-Be	M	4.54	34	5,347	1.5
Eating safely when eating out.	Food Safety for Moms-to-Be	M	4.24	39	5,229	1.5
The benefits of waiting to introduce a cup to your baby.	Baby's First Cup	AG	4.26	107	5,192	1.7
Let My Plate guide your choices.	Trust Your Child To Eat Enough	M	4.25	87	5,167	3.4

Table 12 (continued). Top 100 Most Frequently Used wichealth.org Links, Current Evaluation Period

Link Title	Lesson Name	Stage	Mean Link Rating	Favorite Link Rank	Views	Minutes per View
Know that your child will like or dislike some foods.	Secrets for Feeding Picky Eaters	P	4.37	31	5,102	1.9
Fruit and veggie shopping activity for you and your child.	Fruits and Veggies Grow Healthy Kids	P	4.05	28	5,022	1.8
Preparing for the first feeding.	Starting Your Infant on Solid Foods	AG	4.39	79	4,977	6.9
How to know when your baby is ready for a cup.	Baby's First Cup	AG	4.09	96	4,951	1.9
How can I continue teaching my older infant good eating habits?	Starting Your Infant on Solid Foods	M	4.22	77	4,853	1.5
I don't think my baby is ready.	Starting Your Infant on Solid Foods	C	4.23	105	4,787	3.5
Is it ok to put cereal in the bottle to help my baby sleep at night?	Starting Your Infant on Solid Foods	P	4.27	81	4,750	3.1
Cooking safe with your slow cooker.	Keep Your Family Safe From E. Coli	M	4.32	73	4,719	2.4
Let your child grow a virtual garden.	Fruits and Veggies Grow Healthy Kids	M	4.50	14	4,631	2.2
Helping kids like veggies.	Fruits and Veggies Grow Healthy Kids	A	4.20	49	4,563	1.6
How to prepare to introduce a cup to your baby.	Baby's First Cup	AG	4.28	94	4,379	1.8
Can I make my own baby food?	Starting Your Infant on Solid Foods	A	4.37	58	4,360	3.0
Baby food safety tips.	Starting Your Infant on Solid Foods	P	4.23	56	4,350	3.7
Tips for saving money on your grocery bills!	Eat Well - Spend Less	A	4.39	74	4,283	2.6
Let Sesame Street encourage your child to try new foods.	Secrets for Feeding Picky Eaters	P	4.25	35	4,260	2.4
Does my baby need a vitamin supplement?	Starting Your Infant on Solid Foods	M	4.02	108	4,240	1.5
Tips for barbecue and grill safety.	Keep Your Family Safe From E. Coli	M	4.47	70	4,218	1.7
Serve new foods even if they have been served before.	Secrets for Feeding Picky Eaters	A	4.17	27	4,157	3.2
Recipes your children will love to help make - and eat!	Secrets for Feeding Picky Eaters	M	4.59	18	4,081	3.4
What type of cup should I use?	Baby's First Cup	P	4.09	115	4,039	4.0
Let your child choose what foods and how much to eat.	Secrets for Feeding Picky Eaters	A	3.65	66	3,887	0.6
Easy recipes that include fruits and veggies.	Fruits and Veggies Grow Healthy Kids	A	4.09	41	3,824	1.1
Start your own family traditions.	Make Mealtime a Family Time	M	4.44	54	3,780	3.6
Share family stories at mealtimes.	Make Mealtime a Family Time	M	4.17	65	3,776	0.6
How much juice can I give my baby?	Baby's First Cup	A	4.04	145	3,715	2.3
Make mealtime a priority.	Make Mealtime a Family Time	M	4.14	68	3,685	3.0
Make mealtimes fun!	Secrets for Feeding Picky Eaters	M	4.26	23	3,667	2.6
Grill and barbecue foods safely.	Food Safety for Moms-to-Be	M	4.28	57	3,646	1.2
Sing along with your child about drinking water.	Fun and Healthy Drinks for Kids	M	4.18	86	3,602	1.4
Offer plenty of healthy food options.	Secrets for Feeding Picky Eaters	M	4.40	25	3,499	1.4
Stay away from using food as a reward.	Make Mealtime a Family Time	M	4.08	106	3,476	0.9
Be creative with play ideas.	Happy Healthy Active Children	P	4.30	98	3,439	1.3
What should I know about sugary drinks?	Baby's First Cup	A	4.23	132	3,434	1.1
Make eating fruits and veggies fun for your child.	Fruits and Veggies Grow Healthy Kids	A	4.39	53	3,425	1.8
Do not use food as a reward, bribe, or punishment.	Secrets for Feeding Picky Eaters	A	4.34	46	3,336	1.3
Easy meal ideas.	Make Meals and Snacks Simple	A	4.56	30	3,299	2.9
Include children in shopping and making meals.	Secrets for Feeding Picky Eaters	P	4.29	24	3,286	4.9
The risks of starting solid foods too soon.	Starting Your Infant on Solid Foods	AG	4.16	134	3,260	1.0
Fruit and veggie coloring pages and activities your child will love!	Fruits and Veggies Grow Healthy Kids	P	4.16	42	3,251	2.4
Fruit is nature's candy!	Fruits and Veggies Grow Healthy Kids	P	4.17	69	3,142	1.5
Let Sesame Street encourage your child to eat their vegetables.	Fruits and Veggies Grow Healthy Kids	P	4.38	43	3,094	2.0
Maneras fáciles para que su niño pueda comer frutas y vegetales en los restaurantes	Fruits and Veggies Grow Healthy Kids	P	4.50	15	3,001	6.0
Offer small portions and let your child choose what to eat.	Trust Your Child To Eat Enough	P	4.36	121	2,993	2.3
Have your child grow their own fruits and vegetables.	Fruits and Veggies Grow Healthy Kids	P	4.03	85	2,971	2.9
Myths about starting solid foods.	Starting Your Infant on Solid Foods	AG	4.10	161	2,905	1.0
Steps to keeping baby food safe.	Starting Your Infant on Solid Foods	A	4.33	91	2,856	2.7
Fun snack ideas!	Make Meals and Snacks Simple	A	4.43	33	2,854	2.0
How to stock your pantry, refrigerator, and freezer.	Eat Well - Spend Less	P	3.96	99	2,853	3.9
How to prevent choking.	Starting Your Infant on Solid Foods	P	4.37	84	2,832	2.7
How can I reduce the risk of allergies for my baby?	Starting Your Infant on Solid Foods	P	4.47	78	2,826	2.0
Learn about different activities your child can try.	Happy Healthy Active Children	P	4.13	130	2,785	2.3
I was told formula feeding is easier, is that true?	Breastfeeding: Building a Bond for a Lifetime	PC	4.17	233	2,719	1.0
Fun fruit and vegetable activities.	Fruits and Veggies Grow Healthy Kids	A	4.04	75	2,665	1.9
Let your child choose what and how much to eat.	Secrets for Feeding Picky Eaters	M	4.11	55	2,643	2.2
Fun physical activity game for your child.	Happy Healthy Active Children	M	3.95	104	2,639	1.4
Let your child ask for more if they are still hungry.	Trust Your Child To Eat Enough	M	4.50	173	2,536	1.2
Quick and easy snacks.	Make Meals and Snacks Simple	P	4.20	93	2,467	1.5
Fun fruit video that will have your child asking for a healthy snack.	Fruits and Veggies Grow Healthy Kids	P	4.11	72	2,444	3.4
Snacks for all ages.	Make Meals and Snacks Simple	P	4.30	80	2,438	2.3
Fun activities for any type of weather!	Happy Healthy Active Children	M	4.35	102	2,395	1.3

The average overall user rating among the top 100 more frequently used links was 4.3. The link “Recipes your children will love to help make – and eat!” in the “Fruits and Veggies Grow Healthy Kids” lesson was the 6th most frequently accessed link by WICHealth.org users as well as being the link most frequently identified as a user favorite. The 2nd most frequently identified link as a favorite was “Easy fruit and vegetable recipes for your family” from the same lesson, covering a similar topic. In fact, over the last two years, the most commonly identified favorite links all focus on recipe ideas. Increasing the

perceived quality of the wichealth.org user experience will likely be most effective if user interaction with recipe content can be enhanced, such as through meal recipe builder capabilities, alerts about new recipes the user would enjoy and the ability to recommend specific recipes to users based on their profile and wichealth.org usage. Additional profile elements could be added allowing the user to identify foods they like, don't like, or need to avoid for a variety of reasons, such as allergies, lifestyle choices, such as being vegetarian.

Frequently used links that have relatively low mean user ratings, such as the 36th most frequented link, "How can protect my baby from teeth problems?" ("Baby's First Cup"), which had a mean user rating of just 2.0 and favorite link rank of 90, may need to be re-evaluated or enhanced with additional link recommendations addressing specific barriers users have regarding the behavioral changes suggested by the information presented. Also, from the same lesson, the 39th most frequented link, "The benefits of waiting to introduce the cup to your baby", had a favorite link rank of 107 with a mean user rating of only 1.7. This suggests that user perception of the benefit they get from a particular link is strongly related to the lesson itself.

Focused Research Questions

1. *How consistent are wichealth.org site performance statistics from year to year?*
2. *What is the current rate of growth in wichealth.org usage? Using data collected back to the hosting change in December, 2010, what is forecasted usage rate for the next several years?*
3. *What are the current performance statistics associated with the newly implemented impact manager for return users?*

1) How consistent are wichealth.org site performance statistics from year to year?

As demonstrated in tables 2-4, nearly all wichealth.org performance statistics remained consistent year over year. There were only two key measures that varied significantly ($p < 0.05$) between the 2010-2011 and 2011-2012 evaluation periods. First, the percent of user agreement with the exit survey item "I believe I can make changes using what I learned" increased by over 5 percentage points during the current evaluation period compared to the last. This appears to be driven by the large increase in the percentage of "Fruits and Veggies Grow Healthy Kids" lesson uses, which demonstrated levels of performance that exceed the overall average among all lessons.

Second, the percentage of users that begin their lesson in the pre-contemplation stage that progress in stage of change by the end of the lesson decreased significantly from the prior evaluation period. This was driven by the launch of the "Breastfeeding: Building a Bond for a Lifetime Lesson" during the current evaluation period. This lesson has the lowest average number of stages progressed among early beginning stage users (table 3). This lesson also had some of the lowest levels of user agreement with exit survey items. Review of the reasons why users are holding back from the behavior changes suggested by this lesson indicated that most users believe it is too late for them to start breastfeeding or that trying to breastfeed is just too overwhelming (table 13). Ensuring that links for this lesson address these user concerns is warranted.

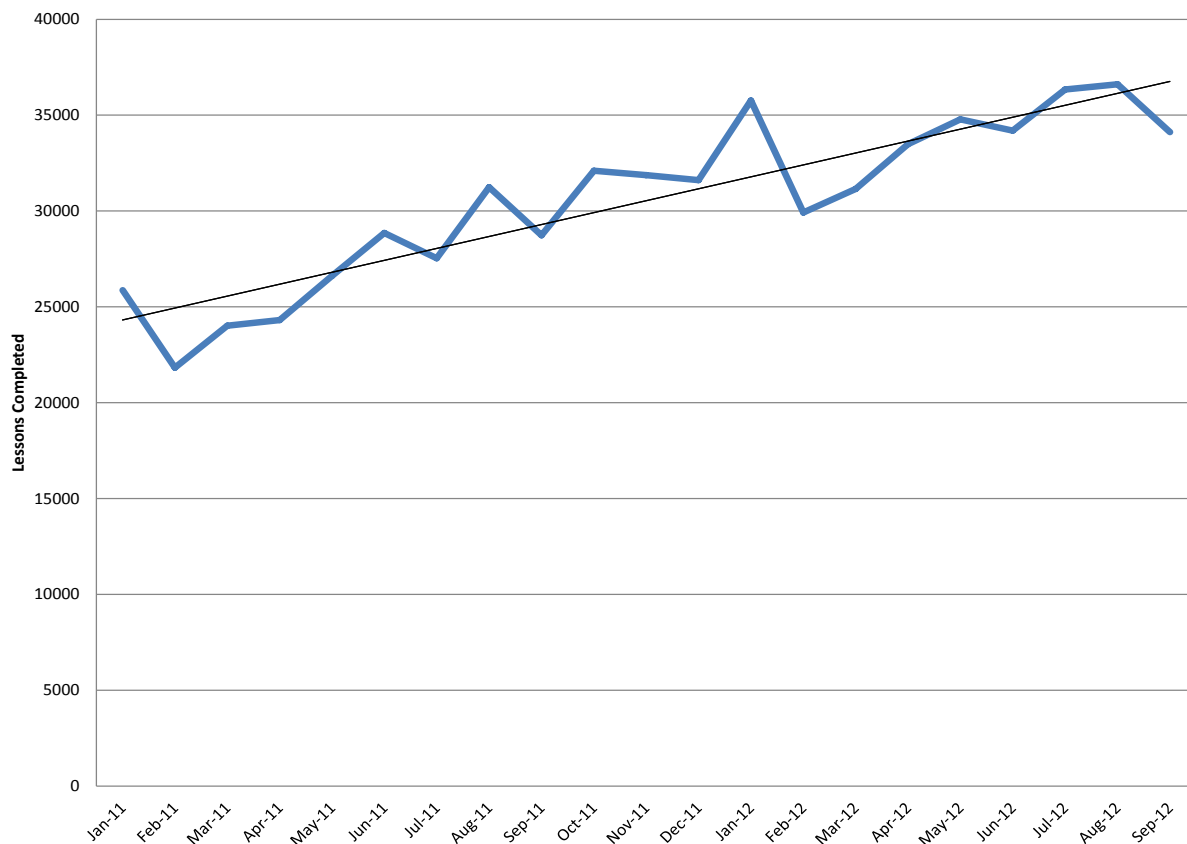
Table 13. Reasons Why Users of the Breastfeeding Lesson are Holding Back from Change

Reason for Holding Back from Behavior Change	User Count
It's too late for me to start breastfeeding my baby.	1,902
Trying to breastfeed is just too overwhelming.	460
I'm too busy to worry about trying to breastfeed.	169
I've already stopped breastfeeding and I think it's too late to start again.	84
I'm not producing enough milk and I'm worried my baby won't get the nutrients she needs.	55
I think I have all the information I will need to get started.	50
I've tried to breastfeed in the past, but I was not successful.	32
Breastfeeding doesn't work for me, it's too frustrating.	25
I think my baby is too old to be breastfed.	25
I really don't understand why it's important to breastfeed.	15
I don't really have the support to do this.	5

2) What is the current rate of growth in wichealth.org usage? Using data collected back to the hosting change in December, 2010, what is forecasted usage rate for the next several years?

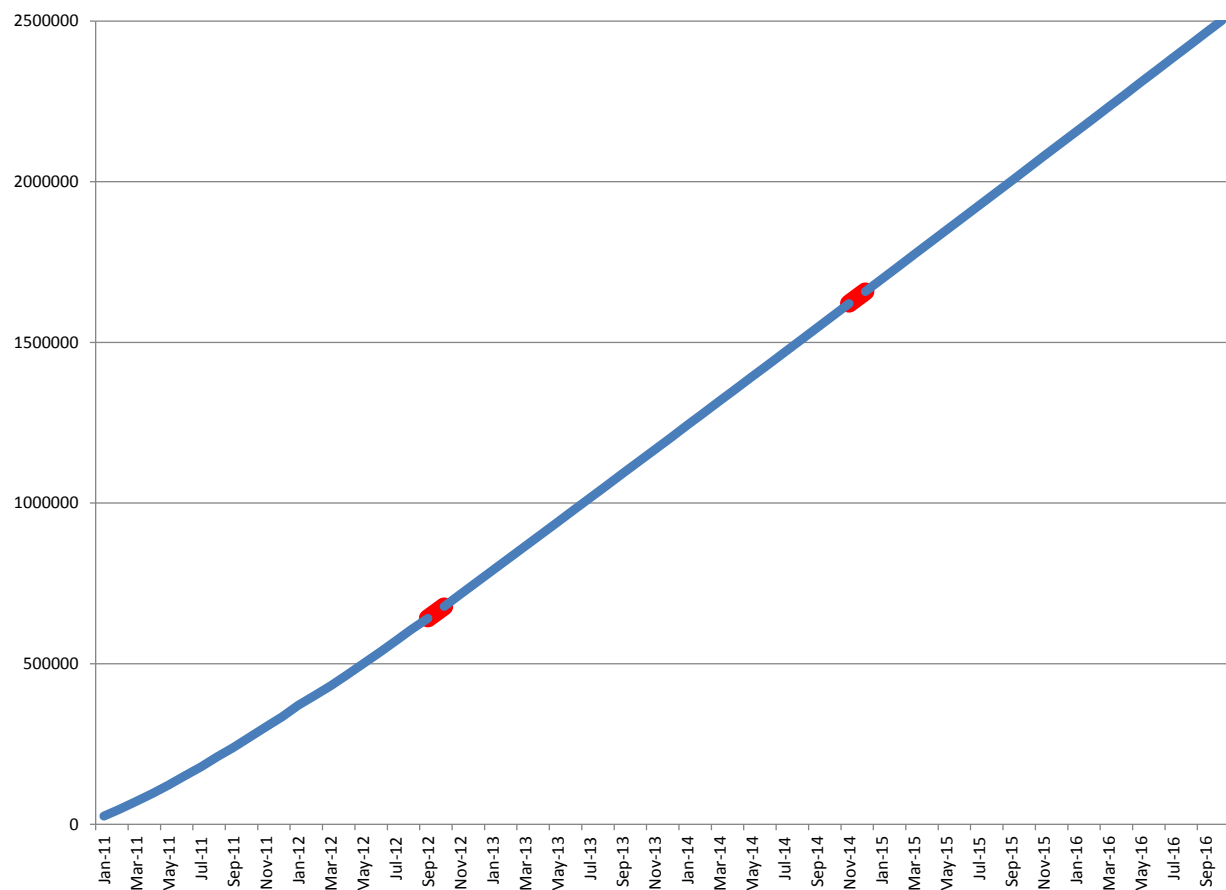
The wichealth.org website continues to demonstrate extraordinary growth in usage among WIC participants, increasing from just over 25,000 completed lessons in January 2011 to about 35,000 in September 2012 (figure 3).

Figure 3. wichealth.org Lessons Completed by Month



Using a statistical calculation for the exponential curve of best fit ($y = b * m^x$), where x is the independent variable for the month of year, y is the dependent variable for number of lessons completed, m is a constant base for the x value and b is a constant which is the value of y when $x = 0$; a forecast model was constructed to predict the point in time at which 1,000,000 additional lessons completed will be achieved. Figure 4 shows that at the current point in time (first red point), nearly 700,000 lessons have been completed since January 2011. The model predicts that another 1,000,000 lessons beyond this will be completed by September 2014, two years from now.

Figure 4. Exponential Curve of Best Fit for wichealth.org Lessons Completed by Month



3) What are the current performance statistics associated with the newly implemented user return impact manager?

On June 7, 2012 the wichealth.org impact manager was launched for the “Make Meals and Snacks Simple” lesson. The impact manager enhancement enables re-assessment of the user stage of change at least 30 days after lesson completion. Since its launch, 595 users that had previously completed the “Make Meals and Snacks Simple” lesson have returned to wichealth.org (thru November 9, 2012). The average number of days from lesson completion that users returned was 62, ranging from 30 to 90 days.

Of these 595 returning users, 61% maintained their stage of change that was assessed following lesson completion (Figure 5). 19% demonstrated further progression in stage of change beyond their original ending stage, while 20% demonstrated a relapse in stage. This is the first time there has been insight into outcomes associated with wichealth.org user behavior at least 30 days following lesson completion. Moreover, this demonstrates that the majority of wichealth.org users are actually modifying their behaviors and adhering to these modifications. Further, a 20% relapse rate is relatively low compared to other existing healthy eating behavioral interventions, establishing wichealth.org as an excellent intervention for fostering long term behavior change.

Figure 5. Stage of Change Movement among Returning wichealth.org Users

